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Perceived Artificial Intelligence Support and Reliance in Instructional Media Generation: A Survey of Malaysian ESL Teachers

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Abstract. Artificial intelligence (AI) is increasingly used to generate instructional media, yet how perceived support is associated with reliance remains underexplored in English as a Second Language (ESL) teaching. This study examined ESL teachers' perceived AI support and self-reported AI reliance in instructional media generation and tested whether perceived support and teaching experience predicted reliance. A quantitative cross-sectional survey used purposive sampling to recruit 111 Malaysian ESL teachers who had used AI for instructional purposes. The two five-item scales demonstrated strong internal consistency (AI support, α = .902; AI reliance, α = .923). Exploratory factor analysis supported their empirical distinctiveness (KMO = .876; Bartlett's test, $p < .001$). Teachers reported high perceived AI support ($M = 4.178$, $SD = .497$) but moderate reliance frequency ($M = 2.822$, $SD = .840$). Reliance was strongest for creating visually engaging or customised media and weakest for using AI-generated frameworks to structure instructional content, suggesting greater delegation at the production layer than at the pedagogical design layer. Hierarchical regression showed that perceived AI support positively predicted reliance (β = .287, $p = .002$), whereas teaching experience negatively predicted it (β = −.274, $p = .003$). The final model explained 19.7% of the variance. The findings position AI reliance as task-specific and suggest that perceived support may encourage its routine use within instructional preparation. Professional development should strengthen teachers' capacity to evaluate, adapt, and retain pedagogical control over AI-generated materials.

Keywords: artificial intelligence; English as a Second Language; instructional media generation; perceived support; teacher reliance; teaching experience

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1. Introduction

Artificial intelligence (AI) is becoming increasingly embedded in teachers' instructional preparation through material adaptation, assessment support, lesson planning, and instructional media generation. In English as a Second Language (ESL) teaching, this development is particularly consequential because instructional media must be linguistically accurate, proficiency-appropriate, visually engaging, and aligned with communicative learning goals. AI tools can now generate texts, worksheets, visual prompts, audio-based resources, presentations, and assessment materials through prompt-based interaction, offering teachers practical support under time and workload constraints (Bonner et al., 2023; Edmett et al., 2023; Melati et al., 2023).

Recent research has documented the instructional potential of AI-generated resources in English language education. AI-supported materials have been associated with vocabulary development, personalised reading, audio-based learning support, and increased learner engagement (Fannoni et al., 2023; Ly & Loc, 2025; Zainuddin, 2024; Sudin & Swanto, 2024). Reviews of AI integration in English language teaching similarly show that AI is moving from an emerging technology to a practical component of instructional planning and classroom practice (Sapuan et al., 2025; Zaidi et al., 2026). These developments indicate that AI can expand teachers' capacity to produce varied and responsive instructional media.

However, instructional media generation is not merely a technical production task. A visually polished or linguistically fluent AI-generated output is not automatically pedagogically appropriate. Teachers must still determine whether the generated media align with curriculum standards, lesson objectives, learners' proficiency levels, cultural-linguistic contexts, and intended classroom interactions. In other words, the need for careful evaluation and alignment reflects the importance of integrated technological, pedagogical, and content knowledge (Celik, 2023). It underscores that the educational value of AI depends not only on what it produces, but also on how teachers evaluate, adapt, and position its output within instruction.

This distinction is central to differentiating perceived AI support from AI reliance. Perceived AI support refers to teachers' judgement that AI helps them perform instructional media-generation tasks more effectively. By contrast, AI reliance concerns the extent to which teachers depend on AI when generating ideas, structuring content, creating customised media, checking materials, or supporting lesson delivery. The two constructs may be related without being interchangeable. AI remains supportive when teachers use generated outputs as editable resources and retain control over pedagogical decisions. Reliance becomes more consequential when AI-generated outputs begin to function as default decisions that shape instructional content, sequencing, language input, visuals, or delivery with limited teacher evaluation.

Existing research has not sufficiently connected these two dimensions at the level of specific teaching tasks. One strand of AI-in-language-education research has

focused primarily on usefulness, efficiency, engagement, and material development. A separate strand has examined AI reliance, dependency, and the possible displacement of human judgement (Avsheniuk et al., 2025; Eckhardt et al., 2024; Zhang et al, 2024). Yet limited attention has been given to whether teachers' perceptions of AI support are associated with their reliance on AI during instructional media generation. This gap is important because reliance may differ according to the instructional task being delegated. Using AI to produce a teacher-specified visual operates mainly at the production layer, whereas allowing AI to determine content sequence, scaffolding, or lesson structure moves closer to the pedagogical design layer.

Therefore, the boundary between support and reliance cannot be determined by frequency of use alone. Teachers may use AI frequently while continuing to review, revise, and justify its outputs. Conversely, occasional AI use may still be pedagogically problematic if generated materials are accepted without adequate scrutiny. Recent language-education research has similarly emphasised that AI should complement rather than replace teachers' professional role (Avsheniuk et al., 2025; Lehfid et al., 2025). From this perspective, the critical issue is whether pedagogical agency remains with the teacher or is gradually delegated to the AI system.

Teaching experience may also shape how teachers position AI within instructional preparation. Teachers with longer experience may have established instructional routines, greater confidence in material development, and a broader repertoire of classroom strategies, potentially reducing their need to depend on AI. However, teaching experience may also overlap with age cohort, digital familiarity, AI exposure, and willingness to adopt emerging technologies (Aldridge & Witherspoon, 2023; Du & Gao, 2022; Sa'diyah & Prasetiyo, 2023). Therefore, it should be treated as a professional-background factor rather than as direct evidence of stronger pedagogical judgement or technological competence.

The present study addresses these gaps by examining perceived AI support and self-reported AI reliance among Malaysian ESL teachers who use AI for instructional purposes. Its contribution lies in positioning AI reliance as a task-specific phenomenon whose pedagogical meaning depends on teacher mediation, rather than as a general attitude toward technology. The study also distinguishes AI use at the production layer from AI involvement in pedagogical structuring and examines whether perceived AI support and teaching experience predict reliance. In doing so, it extends current discussions of AI literacy and teacher agency by focusing on how teachers retain or delegate control during instructional media generation. The study was guided by the following research questions:

1. What are ESL teachers' perceived levels of AI support and AI reliance in instructional media generation?
2. Which aspects of instructional media generation show stronger or weaker self-reported reliance on AI?
3. Do perceived AI support and teaching experience significantly predict teachers' reliance on AI in instructional media generation?

4. How can the findings inform the boundary between teacher-mediated AI support and AI-led reliance in ESL instructional media generation?

2. Literature Review

2.1 Artificial Intelligence Support in ESL Instructional Media Generation

AI is increasingly used in English language teaching to support material development, adaptation, feedback, assessment, and lesson preparation. Recent reviews indicate that AI has progressed from being viewed primarily as an emerging technology to becoming a practical component of language-teaching practice (Sapuan et al., 2025; Zaidi et al., 2026). Teachers can use generative AI to draft reading passages, produce examples, simplify texts, create visual prompts, develop worksheets, and customise instructional resources according to learners' needs. Empirical studies have also documented the potential of AI-generated materials to support vocabulary learning, personalised reading, audio-based learning, and learner engagement (Fannoni et al., 2023; Ly & Loc, 2025; Zainuddin, 2024; Sudin & Swanto, 2024).

The educational value of such support depends on more than the technical quality of the generated output. In ESL teaching, instructional media carry language input, proficiency assumptions, cultural meanings, scaffolding, and communicative purposes. Thus, teachers must evaluate whether AI-generated materials are linguistically accurate, developmentally suitable, curriculum-aligned, and usable within the intended classroom interaction. This requirement reflects the Technological Pedagogical Content Knowledge perspective, which positions effective technology integration at the intersection of technological, pedagogical, and content knowledge (Mishra & Koehler, 2006; Mishra et al., 2023). In the context of AI, Celik (2023) similarly argued that teachers require professional knowledge to select, evaluate, and ethically integrate AI-based tools.

Perceived AI support also shares conceptual ground with perceived usefulness in technology-acceptance research. Perceived usefulness refers to the extent to which users believe that a technology improves their performance (Davis, 1989). Studies of teachers' AI adoption have shown that perceived effectiveness, efficiency, technical readiness, and available support can influence their willingness to use AI-based applications (Du & Gao, 2022). Nevertheless, perceived AI support in the present study is narrower and more task-specific than general technology usefulness. It refers to teachers' perceptions that AI helps them generate ESL instructional media aligned with curriculum requirements, pupils' learning needs, media quality, lesson delivery, and assessment purposes.

This task-specific focus is important because teachers may perceive AI as highly supportive for some activities but less appropriate for others. Producing a visual, generating alternative examples, or adapting the readability of a passage may reduce technical workload while leaving the teacher in control of the instructional purpose. By contrast, allowing AI to select content, organise its sequence, or determine how learners should be scaffolded involves a deeper level of pedagogical delegation. Therefore, perceived support may facilitate productive

use, but it may also increase the likelihood that AI becomes embedded in routine instructional preparation.

2.2 Artificial Intelligence Reliance as a Task-Specific Construct

AI reliance refers to the extent to which users depend on AI when completing particular tasks. It should not be treated as synonymous with AI use. A teacher may use AI frequently while continuing to scrutinise, revise, and contextualise its outputs. Conversely, a teacher may use AI only occasionally but accept its output without adequate evaluation. Therefore, reliance concerns the functional role assigned to AI and the degree of human oversight retained during task completion.

Existing research has raised concerns that dependence on AI may reduce active judgement, effort, or contextual engagement when users begin to treat generated outputs as substitutes for their own reasoning (Eckhardt et al., 2024; Zhang et al., 2024). In language education, Avsheniuk et al. (2025) reported that over-reliance on AI may affect language development, engagement, contextual understanding, collaborative learning, and academic integrity. Their recommendation that AI should operate as an aid rather than a replacement is particularly relevant to instructional media generation, where apparently fluent or attractive outputs may conceal linguistic, cultural, or pedagogical weaknesses.

Reliance should also be understood at the level of individual instructional tasks. In the present study, these tasks include generating ideas, using AI-generated frameworks to organise content, creating customised visual media, checking the quality of materials, and generating visual or audio-visual resources for instructional delivery. These activities do not involve equal levels of pedagogical delegation, as different uses of AI shift varying degrees of instructional decision-making from the teacher to the system (Celik, 2023; UNESCO, 2024). Using AI to produce a teacher-specified visual primarily delegates media production, whereas allowing AI to structure content or determine instructional sequencing delegates part of the pedagogical design process.

This distinction can be understood as the difference between the production layer and the pedagogical design layer. At the production layer, AI assists with the technical creation, presentation, or refinement of teacher-directed materials. At the pedagogical design layer, AI begins to influence what should be taught, how content should be sequenced, what language input should be prioritised, and how pupils should be supported. Reliance becomes more pedagogically consequential as AI moves upstream from executing teacher-specified tasks to shaping the instructional logic behind those tasks.

2.3 Teacher Mediation, AI Literacy, and Pedagogical Agency

Teacher mediation provides a useful lens for distinguishing supportive AI use from reliance-oriented practice. Teacher-mediated use occurs when teachers remain responsible for interpreting instructional needs, specifying the purpose of the generated material, checking its accuracy, adapting it to the learners, and deciding how it will be used. AI-led reliance becomes more likely when generated outputs are accepted as default instructional decisions with limited evaluation or

contextual adaptation, a concern echoed in recent studies highlighting risks of automation bias and reduced critical engagement when users place excessive trust in AI-generated content (Eckhardt et al., 2024; Zhang et al., 2024).

This distinction does not imply that every use of AI in pedagogical planning is inappropriate. AI may contribute ideas, alternatives, or provisional structures that teachers subsequently interrogate and reshape. The central question is whether teachers retain the capacity to accept, reject, revise, and justify the final instructional decision. Lehfid et al. (2025) found that English teachers generally regarded AI as a complementary resource rather than a replacement for the human qualities central to teaching. This supports a view of AI integration in which professional judgement remains the organising authority.

Hence, AI literacy extends beyond the technical ability to operate an AI tool. It includes understanding how AI functions, applying it appropriately, critically evaluating its outputs, and recognising the ethical implications of its use (Ng et al., 2021). In the educational context, UNESCO's (2024) AI Competency Framework for Teachers further emphasises responsible, human-centred, and pedagogically informed AI use, including the protection of learner interests and the evaluation of whether AI applications are appropriate for particular educational purposes. Celik's (2023) Intelligent-TPACK framework similarly suggests that teachers need integrated technological, pedagogical, content, and ethical knowledge when incorporating AI into education. Together, these perspectives highlight that effective AI integration in education depends not only on technical proficiency, but also on informed, critical, and ethically grounded decision-making by educators.

These competencies are closely connected to pedagogical agency. In this study, pedagogical agency refers to teachers' continued authority to define instructional goals, interpret classroom needs, and determine how AI-generated resources should be used. Thus, the boundary between support and reliance is not defined by AI use versus non-use. It is defined by whether AI extends teachers' capacity to act or gradually begins to substitute for their instructional reasoning. This boundary-oriented framing advances existing work by positioning reliance as a question of task allocation and professional control rather than merely technology frequency.

2.4 Teaching Experience and AI Reliance

Teaching experience may influence how teachers position AI within instructional preparation. Experienced teachers often possess established routines, accumulated classroom knowledge, and a wider repertoire of instructional strategies. These resources may allow them to use AI more selectively or to prepare materials without depending heavily on AI-generated support. Studies of teachers' technological knowledge have also shown that professional experience and teaching context may be associated with differences in how technology is understood and integrated (Li et al., 2022; Sari et al., 2025).

However, the direction of this relationship is not straightforward. Longer teaching experience may coincide with less familiarity with emerging digital tools, while teachers with fewer years of service may have greater exposure to contemporary technologies or be more willing to experiment with AI. Veteran teachers may also resist technologies that appear to disrupt established practices or require substantial changes to familiar routines (Aldridge & Witherspoon, 2023). Research on digital-native and digital-immigrant distinctions similarly suggests that teachers' technological engagement may be shaped by generational exposure, confidence, and prior experience (Sa'diyah & Prasetiyo, 2023).

Therefore, teaching experience should not be treated as a direct measure of AI literacy, technological competence, or pedagogical judgement. Its association with reliance may reflect several overlapping mechanisms, including confidence in independent material preparation, openness to innovation, digital familiarity, workload, access to professional learning, and frequency of AI use. In the present study, teaching experience is consequently positioned as a professional-background predictor whose contribution is examined after perceived AI support has been considered.

2.5 Conceptual Framework

The conceptual framework distinguishes perceived AI support from AI reliance while proposing that the two constructs are related. Perceived AI support represents teachers' judgement that AI assists the pedagogical and technical work of instructional media generation. AI reliance represents the reported frequency with which teachers depend on AI for specific media-generation tasks. Technology-acceptance research suggests that users are more likely to adopt and continue using technologies they perceive as useful (Davis, 1989; Du & Gao, 2022). Accordingly, teachers who perceive stronger AI support may be more likely to incorporate AI repeatedly into instructional preparation and consequently report greater reliance.

Teaching experience is included as a second predictor because professional background may shape teachers' existing instructional routines, confidence, technological familiarity, and willingness to delegate preparation tasks to AI. Perceived AI support is entered first in the hierarchical regression because it is the study's principal task-specific predictor. Teaching experience is subsequently entered to determine whether professional background contributes additional explanatory value beyond teachers' perceptions of AI support. The proposed model is as shown in Figure 1.

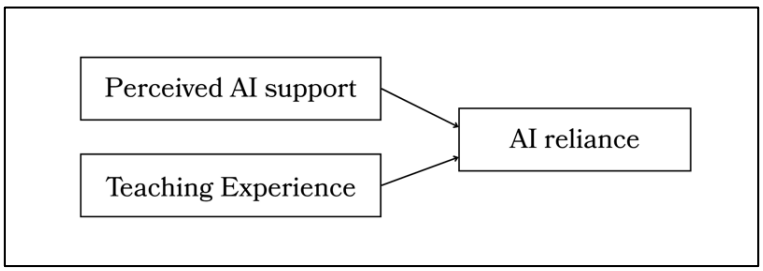

Figure 1: Conceptual framework of the study

The framework does not assume that perceived support inevitably produces problematic dependence. Rather, it proposes that perceived support may increase the likelihood of reliance, while the pedagogical meaning of that reliance depends on the task delegated and the degree of teacher mediation retained. Therefore, the model connects technology acceptance with teacher agency by examining not only whether AI is considered useful, but also how far teachers depend on it during instructional media generation.

3. Methodology

3.1 Research Design

This study employed a quantitative cross-sectional survey design to examine Malaysian ESL teachers' perceived AI support and self-reported AI reliance in instructional media generation. The design was appropriate as the study aimed to describe both constructs, identify task-level variation in reliance, and determine whether perceived AI support and teaching experience predicted AI reliance. Data were collected using a structured online questionnaire.

3.2 Participants and Sampling

The participants were 111 Malaysian in-service ESL teachers who had previously used AI tools for instructional purposes. Purposive sampling was employed because participation required direct experience relevant to the study. Two inclusion criteria were applied: respondents had to be practising ESL teachers and had to have used AI for instructional preparation or teaching. An a priori power analysis conducted using G*Power indicated that at least 107 respondents were required for a multiple regression model with two predictors, assuming a medium effect size ($f^2 = .15$), an alpha level of .05, and statistical power of .95. The final sample of 111 exceeded the minimum requirement.

The sample comprised 33 male teachers (29.7%) and 78 female teachers (70.3%). Regarding teaching experience, 25 respondents (22.5%) had taught for one to five years, 42 (37.8%) for six to ten years, 22 (19.8%) for 11 to 15 years, and 22 (19.8%) for 16 years or more. For the regression analysis, teaching experience was grouped into 10 years or less (n = 67, 60.4%) and more than 10 years (n = 44, 39.6%). This grouping provided two sufficiently sized categories and enabled an interpretable comparison between teachers in earlier and more established stages of professional experience.

As the recruitment was conducted through professional networks and social media, participation was voluntary and based on self-selection. The resulting non-probability sample may over-represent teachers who were more interested in, familiar with, or willing to discuss AI. This sampling boundary is considered when interpreting the findings.

3.3 Instrument

The questionnaire consisted of three sections. Section A collected demographic information, including gender and teaching experience. Section B measured perceived AI support in instructional media generation, while Section C measured self-reported AI reliance.

The perceived AI support construct contained five items adapted from Celik's (2023) Intelligent Technological Pedagogical Content Knowledge framework, particularly its technological content knowledge and technological pedagogical content knowledge dimensions. The items assessed whether teachers perceived AI as helping them prepare curriculum-aligned media, personalise materials, create engaging resources, facilitate lesson delivery, and develop assessment-related media. A sample item was: "AI helps me personalise instructional media to suit the varying needs of my ESL pupils."

The AI reliance construct contained five items adapted from Andie's (2024) AI dependency instrument and subsequently contextualised for instructional media generation. The items measured reliance on AI for generating ideas, structuring content, producing customised visual media, checking instructional materials, and simplifying instructional delivery. A sample item was: "I rely on AI tools to create visually engaging or customised media instead of designing them manually."

Both constructs used five-point scales, but their response anchors differed because they represented different response meanings. Perceived AI support was measured using an agreement scale ranging from 1 (strongly disagree) to 5 (strongly agree). AI reliance was measured using a frequency scale ranging from 1 (never) to 5 (always). Composite scores were calculated by averaging the five items within each construct. Higher scores represented stronger perceived support or more frequent reliance. Because the response anchors differed, the two composite means were interpreted within their respective response frames rather than directly compared.

3.4 Content Validity and Reliability

The questionnaire was reviewed by three experts in English language education, instructional technology, and research methodology. They evaluated the clarity, relevance, and alignment of the adapted items with the study objectives. Their feedback informed several wording and contextual refinements. Most notably, the reliance scale was changed from an agreement-based response format to a frequency-based format to reflect more directly how often teachers depended on AI for particular tasks.

A pilot study involving 50 respondents was conducted before the main data collection. The perceived AI support scale recorded a Cronbach's alpha of .899, while the AI reliance scale recorded an alpha of .937. Both values exceeded the commonly accepted .70 threshold and indicated strong internal consistency. Full-sample reliability remained strong. Cronbach's alpha was .902 for perceived AI support and .923 for AI reliance. These values exceeded the commonly accepted .70 threshold and indicated strong internal consistency (Nunnally & Bernstein, 1994; Taber, 2018).

3.5 Construct Validation

Exploratory factor analysis was conducted on the ten support and reliance items to examine whether the two constructs were empirically distinguishable. Principal-axis factoring with direct oblimin rotation was used as perceived

support and reliance were theoretically expected to be related rather than independent. The data were suitable for factor analysis, as indicated by a Kaiser–Meyer–Olkin value of .876 and a significant Bartlett's test of sphericity, $\chi^2(45) = 828.25$, $p < .001$. Two factors were retained based on eigenvalues greater than one, inspection of the scree plot, and conceptual interpretability. The extracted two-factor solution accounted for 70.1% of the variance. The five AI support items loaded primarily on one factor (.622 - .869), while the five AI reliance items loaded primarily on the second factor (.677 - .950). Cross-loadings did not exceed .214 and the factor correlation was .328. This pattern indicated that perceived AI support and AI reliance were related but empirically distinct constructs.

3.6 Data-Collection Procedures

Data were collected through Google Forms over four weeks. The questionnaire link was distributed through teachers' professional networks and social media platforms. The introductory page explained the study purpose, eligibility criteria, expected participation, confidentiality safeguards, and voluntary nature of participation. Respondents proceeded to the questionnaire only after reading this information. Completed responses were screened according to the inclusion criteria. No personally identifiable information was collected, and the dataset was stored securely for research purposes. The data were then checked for completeness, coded, and prepared for statistical analysis.

3.7 Ethical Considerations

The study involved adult professionals and collected no personally identifiable or sensitive information. Participation was voluntary, and respondents could choose not to proceed or could discontinue before submitting the questionnaire. Informed consent was indicated by voluntarily proceeding with and submitting the online form after reading the participant information statement. Responses were treated confidentially and used solely for research purposes.

3.8 Data Analysis

Data were analysed using IBM SPSS Statistics, version 30. Exploratory factor analysis and Cronbach's alpha were used to examine construct validity and internal consistency. Descriptive statistics were used to summarise participant characteristics, perceived AI support, and AI reliance. Means and standard deviations were calculated for the composite scales and individual reliance items. Perceived AI support means were interpreted as levels of agreement, whereas AI reliance means were interpreted as reported frequency. Composite mean scores were interpreted using equal-width class intervals appropriate to the five-point response scales (Alkharusi, 2022) as shown in Table 1.

Table 1: Interpretation of five-point response scales

Mean	AI support	AI reliance
1.00 – 1.80	Strongly disagree	Very low
1.81 – 2.60	Disagree	Low
2.61 – 3.40	Neutral	Moderate
3.41 – 4.20	Agree	High
4.21 – 5.00	Strongly agree	Very high

Hierarchical multiple regression was then conducted to determine whether perceived AI support and teaching experience predicted AI reliance. Perceived AI support was entered in Model 1 because it represented the study's principal task-specific predictor and was expected to be directly associated with reliance. Teaching experience was entered in Model 2 to determine whether professional background explained additional variance after perceived support had been considered. Teaching experience was recoded as 0 = 10 years or less and 1 = more than 10 years.

The diagnostic results did not indicate serious assumption violations. Tolerance values were .935 and variance inflation factor values were 1.070, indicating no multicollinearity concern. Standardised residuals ranged from −2.026 to 2.166. The maximum Mahalanobis distance was 12.92, and the maximum Cook's distance was .093, suggesting that no observation exerted excessive influence on the model. Statistical significance was evaluated at $p < .05$.

4. Results

4.1 Perceived Levels of AI Support and AI Reliance in Instructional Media Generation

The first research question examined ESL teachers' perceived levels of AI support and AI reliance in instructional media generation. As shown in Table 2, perceived AI support recorded a mean of 4.178 (*SD* = .497), indicating high perceptions that AI supported instructional media generation. AI reliance recorded a mean of 2.822 (*SD* = .840), indicating moderate frequency of reliance. As the two constructs used different response anchors, their mean scores were interpreted within their respective response frames rather than directly compared. The findings indicate that teachers generally regarded AI as supportive while reporting that they relied on it only sometimes across the measured media-generation tasks.

Table 2: Descriptive statistics for perceived AI support and AI reliance

Construct	Mean	SD	Interpretation
Perceived AI support	4.178	.497	High agreement
AI reliance	2.822	.840	Moderate frequency

4.2 Task-Level Variation in AI Reliance

The second research question examined which instructional media-generation tasks showed stronger or weaker reliance. Figure 2 presents the item-level results.

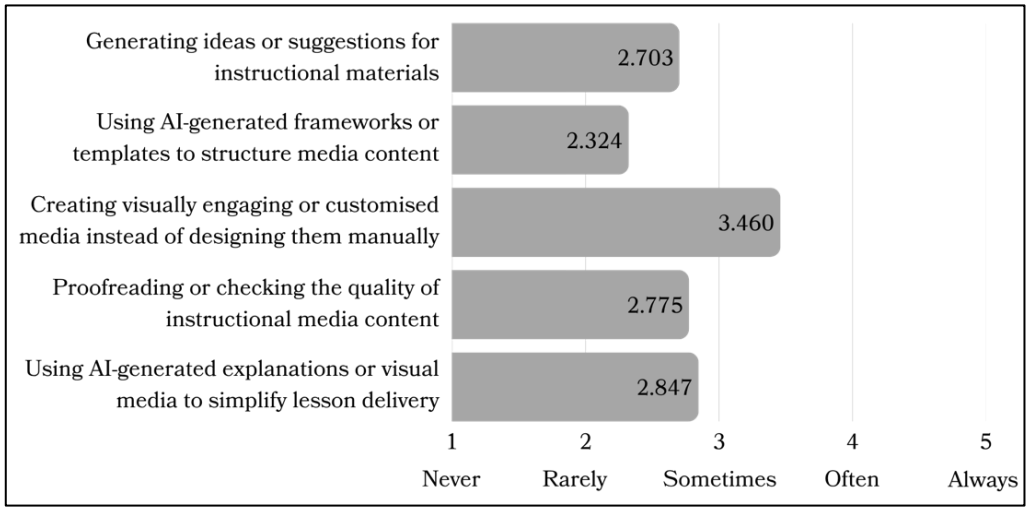

Figure 2: Item-level descriptive statistics on measured reliance tasks

The strongest reliance was reported for creating visually engaging or customised media (M = 3.460, SD = .850). The weakest reliance concerned the use of AI-generated frameworks or templates to structure instructional media content (M = 2.324, SD = .926). Reliance on idea generation, quality checking, and visual or audio-visual support fell between these two tasks. The pattern indicates that teachers relied more strongly on AI for producing or customising media than for structuring instructional content. Thus, the variation was not simply a difference in overall AI use. It reflected the particular instructional function delegated to AI.

4.3 Perceived AI Support and Teaching Experience as Predictors of AI Reliance

The third research question examined whether perceived AI support and teaching experience predicted AI reliance. Hierarchical multiple regression was conducted, with perceived AI support entered in Model 1 and teaching experience added in Model 2.

As shown in Table 3, Model 1 was statistically significant, $F(1, 109) = 15.90$, $p < .001$. Perceived AI support explained 12.7% of the variance in AI reliance ($R^2 = .127$). When teaching experience was added, Model 2 remained statistically significant, $F(2, 108) = 13.29$, $p < .001$. The final model explained 19.7% of the variance ($R^2 = .197$, adjusted $R^2 = .183$). Teaching experience contributed an additional 7.0% of explained variance, $\Delta R^2 = .070$, $\Delta F(1, 108) = 9.44$, $p = .003$.

Table 3: Hierarchical regression model summary predicting AI reliance

Model	Predictors	R	R^2	Adjusted R^2	ΔR^2	ΔF	p
1	Perceived AI support	.357	.127	.119	.127	15.90	< .001
2	Perceived AI support and teaching experience	.444	.197	.183	.070	9.44	.003

In the final model as shown in Table 4, perceived AI support positively predicted AI reliance, B = .485, SE = .151, β = .287, t = 3.219, p = .002, 95% CI [.186, .784].

Teachers who perceived AI as more supportive tended to report more frequent reliance on it. Teaching experience negatively predicted AI reliance, $B = -.468$, $SE = .152$, $\beta = -.274$, $t = -3.072$, $p = .003$, 95% CI [−.770, −.166]. With teaching experience coded as 0 = 10 years or less and 1 = more than 10 years, the negative coefficient indicates that teachers with more than 10 years of experience reported lower reliance after perceived AI support was controlled.

Table 4: Final regression model predicting AI reliance

Predictors	*B*	*SE*	β	*t*	*p*	*95% CI*
Constant	.981	.652	–	1.505	.135	[–.311, 2.272]
Perceived AI support	.485	.151	.287	3.219	.002	[.186, .784]
Teaching experience	–.468	.152	–.274	–3.072	.003	[−.770, −.166]

4.4 Synthesis of Boundary Indicators between AI Support and AI Reliance

The fourth research question asked how the findings informed the boundary between teacher-mediated AI support and AI-led reliance. Teacher mediation was not measured as a separate variable. Therefore, the boundary was interpreted through the combined descriptive, item-level, and regression patterns rather than treated as a directly observed outcome.

Four indicators were evident. First, teachers reported high perceived AI support but only moderate reliance frequency, suggesting that recognising AI's value did not necessarily correspond to uniformly high dependence. Second, reliance differed across tasks rather than appearing as a general tendency. Third, teachers relied most strongly on AI for visual and customised media production but least strongly on AI-generated frameworks for content structuring. This pattern indicates greater delegation at the production layer than at the pedagogical design layer. Fourth, perceived AI support positively predicted reliance, suggesting that repeated experiences of usefulness may increase the extent to which AI becomes embedded in instructional preparation.

Taken together, the results locate the boundary not in AI use itself but in the instructional function delegated to the system and the degree of control retained by the teacher. AI use remains closer to teacher-mediated support when it assists with producing, refining, or customising teacher-directed materials. It moves closer to AI-led reliance when generated outputs begin to determine instructional structure, content sequence, language input, scaffolding, or delivery with limited teacher evaluation. This interpretation is developed further in the Discussion.

5. Discussion

5.1 Perceived AI Support and AI Reliance

The first research question examined teachers' perceived AI support and self-reported AI reliance in instructional media generation. Teachers reported high agreement that AI supported their work, but only moderate frequency of reliance. These findings should not be interpreted as a direct statistical contrast because the two constructs used different response anchors. Nevertheless, when read within

their respective scales, the pattern suggests that teachers recognised AI's practical value without reporting uniformly frequent dependence on it. This is consistent with studies showing that AI can assist language teachers in preparing materials, adapting texts, generating examples, and developing classroom resources (Bonner et al., 2023; Edmett et al., 2023; Sapuan et al., 2025).

The high perceived-support score reflects the growing practical relevance of AI in English language teaching. Recent research has shown that AI-generated resources may support vocabulary learning, personalised reading, audio-based learning, and learner engagement when they are appropriately aligned with language-learning needs (Fannoni et al., 2023; Ly & Loc, 2025; Sudin & Swanto, 2024). Zaidi et al. (2026) similarly observed that educators increasingly encounter AI as part of instructional preparation and classroom practice. The present findings extend this evidence by showing that teachers perceive AI as supportive specifically in the task of instructional media generation.

At the same time, the moderate rather than high reliance score indicates that perceived usefulness does not necessarily translate into complete dependence. Teachers may value AI while continuing to use other resources, prior experience, professional knowledge, and personal judgement during preparation. Research on technology integration has shown that teachers combine digital tools with different instructional practices depending on pedagogical goals, familiarity, and classroom context (Celik, 2023; Raave et al., 2024). Thus, AI support and AI reliance are related but should not be treated as interchangeable constructs.

5.2 Task-Specific Variation in AI Reliance

The second research question examined variation in reliance across instructional media-generation tasks. Reliance was strongest for creating visually engaging or customised media and weakest for using AI-generated frameworks or templates to structure instructional content. This pattern indicates that reliance was task-specific rather than a general disposition towards AI. Previous language-education research has similarly shown that AI is used differently across material creation, feedback, language support, and instructional preparation tasks (Bonner et al., 2023; Sapuan et al., 2025).

The stronger reliance on visual and customised media may reflect the technical demands of producing attractive instructional resources. Generating illustrations, visual prompts, audio-visual materials, and customised layouts can require time, design expertise, and access to specialised software. AI may reduce these demands by transforming teacher instructions into usable media more quickly. Studies of AI-generated materials have reported particular benefits for visual support, resource personalisation, and learner engagement (Fannoni et al., 2023; Zainuddin, 2024). Therefore, reliance at this production layer may represent an efficiency-oriented delegation of technical work rather than the wholesale transfer of pedagogical judgement.

By contrast, the lower reliance on AI-generated frameworks or templates suggests that teachers were less willing to delegate instructional structuring. Organising content involves decisions about lesson objectives, sequencing, language difficulty, scaffolding, and classroom interaction. These decisions depend on contextual knowledge that AI systems may not fully possess. Celik (2023) argued that responsible AI integration requires teachers to combine technological, pedagogical, content, and ethical knowledge, while UNESCO (2024) emphasised teachers' responsibility for evaluating whether AI-generated resources fit learners and educational purposes. Thus, the lower reliance on content-structuring tasks may indicate that teachers retained greater control over pedagogical design.

The distinction between the production layer and the pedagogical design layer provides a clearer interpretation of the boundary between support and reliance. AI may remain supportive when it executes a teacher-specified task, such as generating a visual based on a predetermined lesson objective. Reliance becomes more pedagogically consequential when AI begins to select, prioritise, or sequence content and thereby influence the instructional logic of the lesson. Avsheniuk et al. (2025) similarly cautioned that AI should operate as an aid rather than a replacement in language education, while Lehfid et al. (2025) found that teachers valued AI as a complementary resource rather than as a substitute for the human dimensions of teaching. Therefore, the relevant boundary is not AI use versus non-use, but the extent to which pedagogical agency remains with the teacher.

5.3 Perceived AI Support as a Predictor of Reliance

The third research question examined whether perceived AI support and teaching experience predicted reliance. Perceived AI support positively predicted AI reliance and explained 12.7% of its variance before teaching experience was added. This finding is consistent with technology-acceptance research, which proposes that users are more likely to adopt and continue using technologies that they perceive as useful for improving task performance (Davis, 1989). In AI-supported language teaching, perceived effectiveness, efficiency, and instructional usefulness have similarly been associated with teachers' willingness to adopt AI applications (Du & Gao, 2022).

The finding extends technology-acceptance research by showing that perceived usefulness may be associated not only with adoption but also with greater task-level reliance. When teachers repeatedly experience AI as helpful for generating media, adapting materials, or reducing preparation time, the tool may become increasingly embedded in their routine work. Recent reviews show that AI is becoming normalised within English language teaching through repeated use in preparation, feedback, resource development, and learner support (Sapuan et al., 2025; Zaidi et al., 2026). In the present study, perceived support may represent a pathway through which AI becomes a more regular component of instructional preparation.

However, the positive coefficient should not be interpreted as evidence that perceived support causes problematic dependence. The cross-sectional design

establishes an association rather than a causal sequence. Moreover, reliance may remain educationally appropriate when teachers evaluate, revise, and contextualise AI-generated outputs. Eckhardt et al. (2024) noted that AI reliance should be understood in relation to the quality of human oversight, while Zhang et al. (2024) showed that problematic AI use may be shaped by several psychological and contextual factors. Therefore, the pedagogical meaning of reliance depends on how AI is used, not merely on whether reliance increases.

5.4 Teaching Experience as a Professional-Background Predictor

Teaching experience negatively predicted AI reliance after perceived AI support was controlled. Teachers with more than 10 years of experience reported lower reliance than those with 10 years or less. One possible explanation is that experienced teachers possess more established instructional routines, accumulated classroom knowledge, and confidence in preparing materials independently. Research on teachers' technological pedagogical knowledge suggests that professional experience can shape how technologies are selected, evaluated, and integrated into teaching (Li et al., 2022; Sari et al., 2025).

Experienced teachers may also rely more strongly on existing repositories, familiar teaching strategies, or previously developed resources. Hence, their lower reliance may reflect selective adoption rather than rejection of AI. Studies of veteran teachers have shown that established routines can influence how they respond to technologies that require changes in familiar teaching practices (Aldridge & Witherspoon, 2023). This may lead some experienced teachers to incorporate AI only when its advantages are clear and compatible with their current instructional practices.

Nevertheless, teaching experience should not be interpreted as a direct measure of professional judgement or AI competence. It may overlap with age, digital familiarity, prior exposure to AI, professional training, workload, and confidence in emerging technologies. Research comparing digital-native and digital-immigrant teachers has shown that generational exposure and technological confidence may shape patterns of technology engagement (Sa'diyah & Prasetiyo, 2023). Studies on AI adoption and broader technology integration indicate that professional background interacts with perceived value, confidence, complexity, and institutional support (Du & Gao, 2022; Raave et al., 2024). Therefore, the negative coefficient may reflect several overlapping influences rather than a single experience-based mechanism.

These findings do not justify concluding that less-experienced teachers are over-reliant or that more-experienced teachers are automatically more pedagogically careful. Teachers at different career stages may instead require different forms of professional learning. Zaidi et al. (2026) recommended differentiated AI-related professional development that responds to educators' varied levels of competence and experience, while UNESCO (2024) emphasised critical evaluation, ethical awareness, and human-centred decision-making as central teacher competencies. Professional development should consequently strengthen both technical confidence and the capacity to justify when AI should or should not be used.

5.5 Boundary Between Teacher-Mediated Support and AI-Led Reliance

The fourth research question concerned how the findings inform the boundary between teacher-mediated AI support and AI-led reliance. Teacher mediation was not measured as a separate construct, so the boundary is interpreted through the combined patterns of support, task variation, and prediction. The high support score, moderate reliance score, and stronger reliance at the production layer together suggest that teachers generally used AI as an enabling resource while retaining more control over pedagogical structuring. This interpretation is compatible with Intelligent-TPACK and responsible AI competency perspectives, both of which position teachers as evaluators and decision-makers rather than passive recipients of AI output (Celik, 2023; UNESCO, 2024).

The boundary becomes clearer when instructional functions are considered. AI use remains closer to teacher-mediated support when teachers specify the instructional purpose, request a particular resource, evaluate the output, and adapt it to learners' needs. It moves closer to AI-led reliance when generated frameworks, sequences, or materials are accepted as default instructional decisions without sufficient review. Avsheniuk et al. (2025) associated over-reliance with reduced critical engagement and contextual understanding, whereas Lehfid et al. (2025) emphasised the continuing importance of teachers' human and professional roles. Therefore, the central issue is whether AI extends teachers' pedagogical capacity or begins to substitute for their instructional reasoning.

This boundary should not be reduced to a simple threshold of frequency. Frequent AI use may remain teacher-mediated when every output is critically examined, while occasional use may become pedagogically problematic if an output is accepted uncritically. Research on AI reliance increasingly distinguishes appropriate reliance from either excessive trust or unnecessary rejection of AI recommendations (Eckhardt et al., 2024). Accordingly, the present study locates the boundary in the relationship between task delegation and teacher oversight rather than in the number of times AI is used.

5.6 Explanatory Scope and Pedagogical Implications

The final regression model explained 19.7% of the variance in AI reliance. This represents a meaningful but partial explanation of a complex professional behaviour. Social and educational behaviours are commonly influenced by multiple personal, organisational, technological, and contextual factors, and explained variance should be interpreted in relation to the complexity of the phenomenon (Ozili, 2023). The remaining variance may involve workload, time pressure, access to AI tools, school expectations, AI literacy, digital competence, teacher autonomy, and confidence in instructional media design.

The modest explanatory scope also indicates that AI reliance cannot be understood solely through perceived support and teaching experience. Du and Gao (2022) showed that teachers' AI adoption is shaped by a combination of perceived effectiveness, technical readiness, complexity, and support, while Raave et al. (2024) demonstrated that teachers' technology use varies according to instructional purposes and integration practices. Future models should

incorporate additional individual and institutional predictors to explain why similar perceptions of AI support may produce different patterns of reliance.

The findings have implications for teacher education and professional development. Training should move beyond teaching educators how to operate AI tools and should instead develop their capacity to evaluate linguistic accuracy, learner suitability, bias, cultural appropriateness, and pedagogical alignment. UNESCO (2024) positions these evaluative capacities as essential to responsible AI use, while Celik (2023) argues that ethical and pedagogical knowledge must be integrated with technical competence. Teachers should be prepared not merely to generate AI-assisted media, but to explain why the final material is suitable for a particular instructional context.

Professional development should also distinguish between production assistance and pedagogical delegation. Teachers may benefit from practical strategies for using AI to generate visuals, adapt text difficulty, or create alternative media formats while retaining control over objectives, sequencing, and scaffolding. Sapuan et al. (2025) called for systematic and principled AI integration in English language teaching, and Zaidi et al. (2026) highlighted the need for educator-focused professional learning. The aim should not be to minimise AI use, but to ensure that increased capability does not weaken teachers' authority over instructional decisions.

6. Limitations and Future Research

This study has several limitations that define the boundaries of its conclusions. First, the cross-sectional survey relied on teachers' self-reported perceptions and reliance frequencies. Thus, the findings indicate associations rather than causal relationships and may be affected by recall or social-desirability bias. They do not directly demonstrate how teachers evaluated, modified, or used AI-generated media in classroom practice. Future research could combine surveys with interviews, classroom observations, artefact analysis, or longitudinal designs to examine how reliance develops and how teacher mediation operates during actual instructional preparation.

Second, purposive recruitment through professional networks and social media produced a self-selected sample of Malaysian ESL teachers with prior AI experience. Thus, the findings may not represent teachers with limited AI access or interest and should not be generalised to all ESL teachers. The model was also limited to perceived AI support and teaching experience, while teaching experience was grouped for regression analysis. Other potentially influential factors such as AI literacy, workload, digital competence, institutional expectations, access to AI tools, and teacher autonomy were not measured. Moreover, the proposed boundary between teacher-mediated support and AI-led reliance was inferred from the combined task-level and regression patterns rather than measured as a separate construct. Future studies should test this boundary directly using broader samples, more detailed measures of professional experience, and validated indicators of teacher mediation and pedagogical agency.

7. Conclusion

This study examined perceived AI support and reliance in ESL instructional media generation, testing whether perceived support and teaching experience predicted reliance. Malaysian ESL teachers perceived AI as highly supportive but reported moderate reliance across tasks. Reliance was strongest for creating visual or customised media and weakest for using AI-generated frameworks to structure instructional content. Perceived support was positively associated with reliance, whereas teachers with more than 10 years of experience reported lower reliance after perceived support was controlled.

The study's main contribution lies in showing that AI reliance is task-specific rather than uniform. The findings distinguish AI use at the production layer from AI involvement at the pedagogical design layer. AI may support teachers by producing, customising, or refining teacher-directed media, but reliance becomes more pedagogically consequential when AI begins to influence content selection, sequencing, scaffolding, language input, or instructional delivery. Therefore, the key boundary is not AI use versus non-use, nor frequent versus infrequent use. It concerns whether AI extends teachers' capacity while pedagogical agency remains with the teacher, or whether AI outputs begin to function as default instructional decisions.

The positive relationship between perceived support and reliance suggests that the qualities making AI useful may also encourage its routine use within instructional preparation. This does not establish that support causes problematic dependence, but it indicates that AI integration should be accompanied by professional learning focused on evaluation, adaptation, and pedagogical justification. Teacher education and professional development should move beyond operational AI skills to strengthen teachers' capacity to assess the linguistic accuracy, learner suitability, cultural appropriateness, and instructional alignment of AI-generated media. Future research should directly examine teacher mediation and pedagogical agency through classroom-based, qualitative, and longitudinal designs. Ultimately, the educational value of AI depends on whether teachers retain informed and accountable control over how outputs shape learning.

Conflict of Interest

The authors declare no conflict of interest.

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